



#4

UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Myron E. Taylor

Serial No. 09/812,880

Art Unit: 2878

Filed: March 21, 2001

Examiner:

For : Scintillator For Electron
Microscope And Method
Of Making

Attorney Docket:RGE-
2001-1

PRELIMINARY AMENDMENT UNDER 37 CFR 121

Hon. Commissioner of Patents
And Trademarks
Washington D.C. 20231

Sir:

Prior to the examination of the above-identified
application, please amend the application as follows:

IN THE SPECIFICATION

Clean version of replacement paragraph

Please replace the paragraph on page 11, line 12 to
page 12, line 15 with the following paragraph:

--As described above, Figs. 1 and 2 show
schematically a typical prior art electron microscope of
the type in which the invention can be used. The

scintillator of this invention 18 is shown as a disc shaped member consisting of a non-oxidizing retaining ring 20 bonded on its internal surfaces 21 to an optical transparent substrate 24 of quartz, glass, polymer, or any optically clear material. An indium tin oxide (ITO) layer 26 of about 100 to 1000 angstrom thickness is bonded to the inner end 28 of the substrate. The ITO layer 26 is bonded to the inner surface of retaining ring 20 by an electrically conductive adhesive, epoxy, or solder 32, particularly in the area between the radially outer edge portion 34 and the inner side 30 of radially inwardly extending lip 22 on ring 20. A layer of scintillator material, preferably about 10 to 400 μ m in thickness, 36 is bonded to the surface 38 of the ITO layer and lip 22 and adhesive material 32 so that electrons impinging on the outer surface 40 thereof produce photons which pass through the ITO layer 26 and are guided by the substrate 24 and the lightpipe, to which the substrate is connected at its outer surface 42 or is an integral part thereof, to the photomultiplier (PMT), such as shown in Figs.1 and 2.--

Version with markings to show changes made.

As described above, Figs. 1 and 2 show schematically a typical prior art electron microscope of the type in which the invention can be used. The scintillator of this invention 18 is shown as a disc shaped member consisting of a non-oxidizing retaining ring 20 bonded on its internal surfaces 21 to an optical transparent substrate 24 of quartz, glass, polymer, or any optically clear material. An indium tin oxide (ITO) layer 26 of about 100 to 1000 angstrom thickness is bonded to the inner end 28 of the substrate. The ITO layer 26 is bonded to the inner surface of retaining ring 20 by an electrically conductive adhesive, epoxy, or solder 32, particularly in the area between the radially outer edge portion 34 and the inner side 30 of radially inwardly extending lip 22 on ring 20. A layer of scintillator material, preferably about 10 to 400 μ m in thickness, 36 is bonded to the surface 38 of the ITO layer and lip 22 and adhesive material 32 so that electrons impinging on the outer surface 40 thereof produce photons which pass through the ITO layer 26 and are guided by the substrate 24 and the

lightpipe, to which the substrate is connected at its outer surface 42 or is an integral part thereof, to the photomultiplier (PMT), such as shown in Figs.1 and 2.

The above paragraph has been amended as follows:

On page 12, line 8, of the specification, -- μ -- has been inserted before "m" to correct an inadvertent omission as originally filed, so that line 8 now reads -about 10 to 400 μ m in thickness, 36 is bonded to the-.

IN THE CLAIMS

Please replace original Claim 4 with the following amended Claim 4:

Clean version of replacement claim 4

4. The method of making a scintillator for an electron microscope comprising:

providing a disc shaped substrate of optically clear material having a first surface, a second oppositely facing surface, and an outer edge side wall;

applying a coating of indium tin oxide on said first surface of said substrate by sputtering;

providing an electrical conducting retaining ring having a non-oxidizing surface, an internal size to fit in close contacting engagement with said side wall of said substrate, and a radially inwardly extending lip on one end;

applying electrical conducting adhesive means on at least the radially outer edge portion of the exposed surface of said indium tin oxide coating;

fitting said retaining ring onto said substrate in close contacting engagement with said side wall of said substrate and said lip overlying in close contacting engagement with said radially outer edge portion of said indium tin oxide coating having said adhesive means thereon to bond said ring to said coating and said substrate; and

depositing scintillation material onto and in bonding relationship with said exposed surface of said coating.

Please add the following new claims:

5. The scintillator as claimed in Claim 1 wherein:

said retaining ring comprises copper having an exterior coating of gold;

said substrate comprises quartz; and

said scintillator material comprises phosphor.

6. The scintillator as claimed in Claim 2 wherein:

said retaining ring has a side wall having a thickness of substantially 5 to 50 mils..

7. The scintillator as claimed in Claim 1 wherein:

said scintillator material is planar in shape and has a thickness of approximately 10 to 400 μ m.

8. The scintillator as claimed in Claim 6 wherein:

said scintillator material has a thickness of approximately 10 to 400 μ m.

Version with markings to show changes made

4. The method of making a scintillator for an electron microscope comprising:

providing a disc shaped substrate of optically clear material having a first surface, a second oppositely facing surface, and an outer edge side wall;

applying a coating of indium tin oxide on said first surface of said substrate by sputtering;

providing [a] an electrical conducting retaining ring having a non-oxidizing surface, an internal size to fit in close contacting engagement with said side wall of said substrate, and a radially inwardly extending lip on one end;

applying electrical conducting adhesive means on at least the radially outer edge portion of the exposed surface of said indium tin oxide coating;

fitting said retaining ring onto said substrate in close contacting engagement with said side wall of said substrate and said lip overlying in close contacting engagement with said radially outer edge

portion of said indium tin oxide coating having said adhesive means thereon to bond said ring to said coating and said substrate; and

depositing scintillation material onto and in bonding relationship with said exposed surface of said coating.

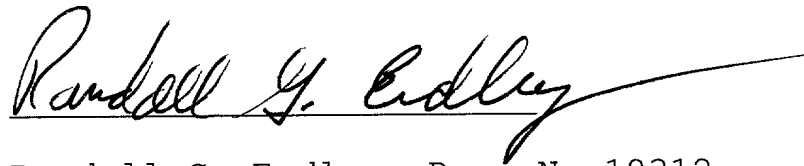
Original Claim 4 has been amended as shown above in line 9 by canceling "a" after "providing" and inserting therefor -an electrically conducting--.

REMARKS

This application is being amended as above, prior to examination, to correct an obvious typographical error on page 12, line 8, wherein the thickness dimension for the scintillator material should have been expressed as about 10 to 400 μ m, to recite in Claim 4 an inadvertently omitted limitation, and to add new claims more specifically reciting the invention in greater detail. With the entry of these amendments it is submitted that the application is in better form for examination and allowance, which action is earnestly

solicited.

Respectfully submitted,

A handwritten signature in cursive script, reading "Randall G. Erdley". The signature is written in dark ink and has a long, sweeping horizontal line extending to the right.

Randall G. Erdley, Reg. No 18312
15201 Springfield Rd.
Darnestown, Md. 20874
Telephone: (301) 208 9315
Facsimile: (301) 208 9315

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